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Some Social and Economic Aspects of the Problem of Rural Health in Oklahoma

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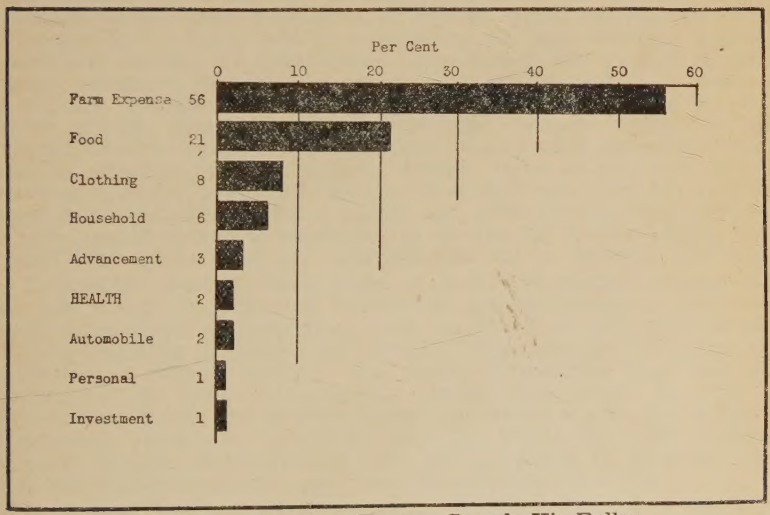


How the Oklahoma Farmer Spends His Dollar
1925-1926

Experiment Station Circular No. 78 September, 1931

SOME SOCIAL AND ECONOMIC ASPECTS OF THE PROBLEM OF RURAL HEALTH IN OKLAHOMA

INTRODUCTION

The matter of public health is of vital concern to every man, woman and child in the state and nation. The economic, social, political, and spiritual life of any society is conditioned in a large measure by the state of physical health enjoyed by the members of that society. A man who is partially incapacitated for work through some malady or another is thereby unable to contribute his full share to the income of the state. The difference between what an indisposed man can produce and that which is produced by a healthy man is a total loss to not only the individual himself but also to the society of which he is a part. To this loss in productivity must be added a large needless expense in the form of nursing, physician's care, drugs and medicines. This means that the losses to the community resulting from sickness cannot be measured simply in terms of loss in wages to the sick man himself. It is therefore necessary to take into account losses accruing from a lower productivity in goods and services as well as the losses to society resulting from the cost of medical attention and care.

From these remarks it can be seen that poor health in a community may be taken as the starting point in a vicious circle. Sickness for the bread winner means inability to work and secure an income. This, if prolonged, brings about a condition of poverty, which not only results in no income, but in either debt or dependency. In this condition, a family is unable to procure the fundamental necessities of life; so food, clothing, shelter, necessary medical and dental care are reduced to a state of inadequacy. Children are undernourished; they become anemic, they cannot protect themselves from preventable diseases. Infectious and epidemic diseases attack the family from without while degenerative and endemic disorders, working within, weaken their vitality and destroy whatever vigor and power of resistance there may have been left in them. Every recurrence of this cycle of disease and poverty comes with increased violence, and if allowed to continue may weaken the human race to such a point that recuperation and rehabilitation will be virtually impossible.

In primitive societies, whole tribes of people who neither employed nor had any means of protecting themselves against pestilence have been utterly extinguished by scourges such as scurvy, yellow fever and the like. In many countries of Europe the so-called "Black Death" decimated the population of civilized nations. The plagues of ancient Egypt are also illustrations in point. Contemporary China and India, as well as Revolutionary Russia and modern Europe and America with the epidemics of influenza which were concurrent with the World War offer positive, but grim evidence of the ravages that may be caused by allowing communicable disease to get the upper hand of preventive measures.

In general, the problem of health is two-fold. First, it is largely a matter of education. The values to be derived through vaccination, sanitation, quarantine and prophylaxis cannot be generally disseminated throughout the community in the absence of well defined and clear cut educational objectives. Furthermore, these objectives must be indoctrinated into the minds of the people, if they are to become effective. In the second place, health progress is an economic problem. Not only is it necessary

to know what needs to be done to promote either private or public welfare through the prosecution of scientific principles, but it is also imperative that some tangible means of defraying costs be in sight. Unfortunately, the absolute costs of health maintenance to a family are frequently, at the moment of their incidence, too great in proportion to income to seem allowable, unless there is immediate danger to life. Because the cost is heavy the ordinary disposition of the individual may be one of procrastination. The average man or woman most likely does not consider the cumulative effects of functional and organic disorders of the body. In other words, because of immediate costs, people are inclined to postpone preventive as well as curative treatments until a convenient time, not mindful that costs will increase almost in direct, sometimes in geometric proportions as a chronic disease is allowed to progress. In this respect, it is mandatory that health education shall be concerned with long run effects, and that the population be taught that costs as well as benefits are to be distributed over long periods of time. Furthermore, it should become the exception rather than the rule that a family which takes advantage of preventive measures in order to insure good health should in any one year incur health expenses that are prohibitively high. In both of these respects, public health may be resolved into a broader and more general social problem.

EDUCATIONAL PHASES OF HEALTH PROBLEMS

The educational and social aspects of public health in Oklahoma have shown signs of rapid progress. In fact, there is now in operation in Oklahoma a state health organization with a definite program mapped out, and actually being executed, that is truly commendable. The State Department of Public Health included nine divisions in 1929, the latest report now available. These were: The Bureau of Foods and Drugs and Sanitary Inspection, Bureau of Diagnostic Laboratories and Sanitation, Bureau of Venereal Disease, Bureau of Communicable Disease, Bureau of Maternity and Infancy, Bureau of Sanitary Engineering, Bureau of Dental Health Education, Bureau of Vital Statistics, and the Bureau of Public Health Education. The State of Oklahoma was admitted to the Federal Registration area in April of 1928. This means that at least 90 per cent of the births and deaths occurring in the state each year are being reported to the Health Department. The educational value of the statistics as to causes of death cannot be over estimated because every death certificate is a reminder that something must be done to control, especially in the early and middle periods of life, the particular cause of death described on the registration card. The birth certificate is also of great importance because it is the guarantee of citizenship, of the right of the child to parental care, of property rights, and of a family name. In short, it is the legal birth of the child, and in any case should be properly executed and filed for record.

Ignorance is a factor in the spread of disease. Colds, influenza, diphtheria, scarlet fever, venereal disease, and many other contagious diseases are spread because people either do not realize the dangers that lurk in them or do not have a proper appreciation of the rights of others. Infected persons, either through carelessness or irresponsibility often endanger others. Exposures to such diseases are often the result of ignorance of the simple measures that may be employed in the prevention and control of infections. These facts make imperative a continuous program of public health education among the young children in the schools, and rigid enforcement of sanitary regulations on the part of municipal governments and other agents of public administration. It is a known fact that such diseases as typhoid, measles, chicken pox, small pox,

TABLE I.
Health Expense According to Average Education of Husbands and Wives
1925 *

AVERAGE YEARS OF SCHOOLING	TOTAL FAMILIES	ALL HEALTH EXPENSE		MEDICINES		DENTAL		DOCTOR AND HOSPITAL	
		AVERAGE	PER CENT OF AVERAGE	AVERAGE	PER CENT OF AVERAGE	AVERAGE	PER CENT OF AVERAGE	AVERAGE	PER CENT OF AVERAGE
TOTAL AND AVERAGE	740	$69	100.0	$20	100.0	$6	100.0	$43	100.0
4 years or less	173	52	75.4	17	85.0	2	33.3	32	74.4
5 to 8 years	473	73	105.8	21	105.0	7	116.7	45	104.7
9 years or more	94	82	118.8	21	105.0	10	166.7	51	118.6

* Source: From a marketing survey in 1925 of McIntosh, Kiowa, Tillman, Greer, Stephens, Carter, Love, and Jefferson Counties

whooping cough, and diphtheria are more active and virulent among country children than among the children of the city. This is mostly because of the existence of less thorough education and more laxity in the enforcement of the common rules of protection against them in the country than in the cities.

It may also be noted here that the amount of schooling received by heads of families is an important factor in determining just how much a farm family spends per year for health maintenance. The families included in eight Oklahoma counties were classified according to the average education of the husband and wife as represented by adding together the grades each completed in school and dividing the total by two. The results of this are shown in Table I.

Here are 740 farm families surveyed at random from eight cotton counties of Oklahoma. These families are divided into three groups according to the average number of years spent in school by both parents. The low group in this case includes all families in which the average education of both the farmer and his wife was four years or less; the middle group includes those who spent from five to eight years in school, while the high group includes all families in which the average education of the parents was from nine years on upward. The percentage that each of these groups of families comprised of the total was: low group, 23.3 per cent; middle group, 64.1 per cent; high group, 12.6 per cent.

For this group of 740 farm families the 1925 average annual expenditure for health was $69 per family. The low educational group spent $52, or 75 per cent of the average; the middle group spent $73, or 106 per cent of the average; and, the high spent $82, or 119 per cent of the average for the entire group. This means that on the whole, the families with the least education have the poorest protection from ill health. At the same time it is generally true that this same class of families has the highest rates for sickness and disease found in any group.

The average expenditure per family for dental treatment was $6 in 1925. The low group spent only $2; the middle group, $7; and the high group $10 per family for this item of health. Although these amounts are small in each class, they represent a wide variation among the different educational classes of farmers, and indicate quite clearly that the importance of dental hygiene is more fully realized by the better educated classes of farmers than by those of only low educational attainment.

The annual amounts spent per family for doctor's and hospital care increases in direct proportion as the amount of education increases. The average amount for these phases of health spent by the 740 families in 1925 was $43 per family. However, the low educational group spent in the same year only $32 per family, or 74 per cent of the average amount. The middle group spent $45, or 105 per cent of the average per family; while the high educational group spent $51 per family or 119 per cent of the average family expense for these items.

The figures shown here indicate that in this day of specialization the more highly educated groups are coming to realize faster than those with limited educational advantages the need of professional care in matters relating to the preservation of health. One need not be afraid to say that the differences which have appeared in the health budgets of different classes of farm families are due, in part at least, to other conditions besides the financial status of the family.

Education gives knowledge of dangers to health; it stimulates precaution and care; it tends to reshape and redirect one's habits of spending. Also, it creates new desires, and destroys old ones. The final conclusion is that if all differences in the education of the various groups in human society were removed by improving the status of the lower educational classes, the control of contagious diseases would become much less of a problem than it has been in the past or is now.

ECONOMIC PROBLEMS OF HEALTH

The economic aspects of health in Oklahoma present a picture in which there is adequate cause for concern.

TABLE II

Preventable Deaths From Principal (Communicable) Causes, Indicating Annual Monetary Loss For Year 1929, Oklahoma *

Source: Tenth Annual Report, Oklahoma State Department of Health, p. 96

CAUSE	DEATHS	PER CENT PREVENTABLE	DEATHS PREVENTABLE	UNIT VALUE	MONETARY LOSS
TOTAL	4973	76	3 [illegible]		$12,432,000
Typhoid	218	99	279	$5,000	$1,395,000
Diphtheria	290	90	261	1,000	261,000
Scarlet Fever	41	85	34	1,000	34,000
Measles	18	70	13	500	6,500
Whooping Cough	129	70	91	500	45,500
Poliomyelitis	27	50	14	1,000	14,000
Small-pox	8	99	7	3,000	21,000
Malaria	154	95	146	3,000	438,000
Tuberculosis	1310	80	1048	5,000	5,240,000
Pneumonia	2615	60	1569	3,000	4,707,000
Venereal	100	90	90	3,000	270,000

* The methods of calculation applied herein are those promulgated by the National Conservation Commission.

ANNUAL LOSS, PREVENTABLE DISABILITY (Sickness-Accident) 1929

Loss to Individuals—

One-fourth of our population are wage-earners 597,000
Average days lost annually from preventable causes 4
Average wage per day $2.50
597,255 x $2.50 x 4 equals ..... $ 5,972,550

Loss to Industry—

It is accepted that the loss to industry in disorganization, idle overhead and lessened production is two and one-half times the wage loss.
$5,972,550 x 2½ equals $14,931,375

Medical Attendance—

Two thousand physicians with an average income of $3,000 devote one-half of their time to treating preventable disability.
2,000 x $3,000 x ½ equals ..... $ 3,000,000

Nursing Service—

Three thousand nurses with an average income of $1,000 are half-time employed on cases of preventable disability ..... $ 1,500,000

Drugs and Accessories—

One million of our people spend annually at least $3.00 per capita for drugs, etc., one-third of which is for the relief of preventable conditions.
3,000,000 x ⅓ equals ..... $ 1,000,000

Total Preventable Disability, Costs $26,432,000
Total Preventable Deaths, Costs 12,432,000

$38,835,000

The data given in Table II show the enormity of the economic loss resulting to the people of Oklahoma from preventable deaths and disabilities. It is true that these figures, taken from the reports of the State Department of Health, are hypothetical to a great extent. Yet, an average wage of $2.50 per day is not a high figure for twentieth century American wage earners. According to these estimates the cost of preventable sickness and death was just about $19 for every human being, and approximately $100 on the average for every family, living in Oklahoma in 1929. The good which this great amount of wasted wealth would have done in the relief of suffering during the depression of 1930-1931 in Oklahoma and adjoining states, had it been available, is incalculable. This huge sum properly used would carry on all the work of state government, public education, and public improvements in Oklahoma for a whole year. If this dissipated wealth or potential wealth could be saved and utilized by the state, it would be sufficient to bear the burden of all functions and departments of the state government without necessitating the assessment and payment of one penny in taxes of any sort from any person in the state. This fund would equal almost twice the amount estimated by the United States Congress in February of 1931 to be necessary for the relief of the stricken farmers in twenty-one drought-stricken states. Thus is given a picture of the possible savings in one year that could be made by the people of Oklahoma through the application of reasonable and scientific measures for the prevention of disease, accidents, and death in the state, not to mention the inestimable misery and suffering that would be spared.

The preceding statements should be sufficient to convince even the skeptical of the complexity and the magnitude of the health problem now before the people of Oklahoma. These facts should arouse the farmers, the business and laboring classes in the cities, the teachers in the public schools, the social workers, the public and private agencies of public welfare, the medical profession in every phase of specialty, and the scientific investigators in all the social studies to an active interest in and a careful vigilance over all branches of public and private health.

At this point it may be of interest to have introduced certain data which show how the farmer in Oklahoma uses his income in the matter of preserving the health of his family.

The data given in Table III show that more than half of the returns which the Oklahoma cotton farmer derives from his year's work is absorbed in carrying on his farming or business enterprise. This is why a crop failure is such a catastrophe. The expenses of running the farm must be paid whether the family account shows a balance at the end of the year or a deficit. After the farm expenses are paid, approximately one half of the remainder must be spent for food; clothing and household operation costs take up over half of what is left after farm and food expenses have been paid. If sickness occurs there is little left for use in meeting its emergencies. The figures presented in the table show that the percentage of the family income spent for health maintenance is higher for renting farmers than for owner farmers. This indicates that there is a tendency for actual health needs to increase in inverse proportion to the ability of the family to pay for health service, and this is to some extent a proof of the operation of the vicious circle which was described in the previous paragraphs.

Speaking in terms of dollars rather than in percentages, from the figures in Table III it may be shown that the average family of all classes of Oklahoma farmers spends approximately $61 per year for all health purposes. According to the figures supplied by the State Health Department, the average family, city, town, village, and farm, loses $100 per year through preventable sickness, accidents and deaths. If, then, all disabilities among the farm population were preventable, the average farm family saves $39 per year more than the average family for the state as a whole.

TABLE III

Percentage Distribution of Oklahoma Farm Family Expenditures Among Different Items By Tenure Groups*

TENURE GROUPS	NUMBER OF FAMILIES	AVERAGE TOTAL EXPENSE PER FAMILY	AVERAGE IN PER CENT PER FAMILY SPENT FOR:								
			FOOD	HOUSE-HOLD OPER-ATION	CLOTH-ING	HEALTH	AD-VANCE-MENT	IN-VEST-MENT	AUTO	PERSON-AL	FARM AND BUSINESS
All Groups	1,329	$2,450	20.7	5.5	8.1	2.4	2.5	1.4	1.7	1.5	56.2
Full Owners	392	3,053	18.0	5.8	7.3	1.9	3.1	1.0	1.8	1.9	59.2
Part Owners	102	3,085	20.5	7.0	7.4	2.3	2.8	1.2	2.4	1.6	54.8
Share and Cash Tenants	717	2,180	22.3	5.0	8.7	2.8	2.0	1.8	1.6	1.4	54.4
Croppers	118	1,534	25.1	5.3	8.9	2.5	2.2	.7	.9	.5	53.9

* These data are taken from a bulletin in preparation by O. D. Duncan and J. T. Sanders and represent a survey of farms in the following Oklahoma Counties: Kiowa, Tillman, Greer, Jackson, Carter, Love, Stephens, Jefferson, Pottawatomie and McIntosh

However, it is to be feared, since it is obvious that it is impossible to prevent illness altogether, that many farm families each year suffer from a lack of adequate medical attention, owing to the fact that the farm expense and food costs consume more than three-fourths of the farm income.

In some counties in Oklahoma, the average farm family expenditures for health maintenance may often run as high as $75 or $100 per family. Usually, such farmers spend on an average around $25 or $30 per year for drugs and patent medicines; approximately $10 per family for dental care, and from $40 to $60 per year for doctors, nurses, and hospital care combined. It is also instructive to observe that the amounts both actual and proportionate spent for drugs and medicines increase in the low income or poorer classes of farmers, indicating a greater dependence of such families upon home remedies than is true in the more well-to-do families.

Another important side of this problem is that of a comparison of the amounts spent for health maintenance by Oklahoma farmers with those spent by farmers in other states for similar purposes. Perhaps the Oklahoma farmer spends more now trying to preserve his health than the farmers of neighboring states. It may be that he spends a greater percentage of his total income in this way than other farmers do. Of course, the important question is not whether he outspends the other fellow, but whether or not his health expenditures are adequate for his needs. It is possible that medical services cost more in states with a larger percentage of their population living in cities than is true for Oklahoma. It is also possible that climate and other natural and even social differences in the respective environments of different states may be partly responsible for variations in amounts used by farmers for health purposes.

In order that these comparisons may be made, Table IV has been prepared from material given in various studies that have been made in different states. There are shown results from eighteen investigations conducted in different parts of the United States. The dates covered by these studies are for the most part between 1925 and 1930, so that the extreme depressions of 1920-1921 and 1930-1931 were not felt to any great extent.

An examination of the data presented from the several states reveals that while Oklahoma farm families rank fourteenth in the absolute amount in dollars spent per family per year for health maintenance, they stand sixth in the groups represented here in the percentage of all family living expenditures that is absorbed by health expenses. It can scarcely be claimed that health conditions are any better or any worse in one of these areas than in any of the others. The incomes of cotton farmers are somewhat lower on an average than those of farmers in some of the other agricultural areas. This means that the same amount of sickness and care would consume higher proportions of the incomes of those farmers who live in low income areas than of those who live where incomes are higher. Thus Oklahoma farmers are probably making greater actual sacrifices to preserve the health of their families than are the residents of many of the other states shown in the data of the accompanying table.

What we should like to see in Oklahoma is a rapid increase in the amounts spent for health maintenance, until the needs for this purpose are amply cared for, and a decline in the percentage of farm income consumed by health needs. This would mean increased ability to pay health expenses, and the health-poverty cycle would start working in the opposite direction, that is, improved health, greater productivity, more wealth, and finally better health.

TABLE IV

Comparative Health Cost Per Family In Various States.

AREA OF STUDY	AGRIC. EXPER. STATION BULLETIN NUMBER	NAME OF INVESTIGATOR	DATE PUBLISHED	AVERAGE HEALTH EXPEND-ITURE PER FAMILY	PER CENT HEALTH IS OF TOTAL FAMILY LIVING COSTS
Minnesota Farms	255	C. C. Zimmerman	1929	$108	9.7
Minnesota Farms	246	Zimmerman and Black	1928	72	8.7
Minnesota Farms	234	Zimmerman and Black	1927	79	8.4
Minnesota Farms	240	Zimmerman and Black	1927	77	7.6
Wake Co., North Carolina	269	W. A. Anderson	1929	56	6.5
OKLAHOMA, Eleven Counties [1]		Duncan and Sanders		61	5.5
Green Co., Wisconsin	106	Kirkpatrick and McNall	1931	89	5.4
Dane Co., Wisconsin	106	Kirkpatrick and McNall	1931	87	5.3
Iowa Farms	238	J. F. Thaden	1928	84	5.0
Groton, New York	431	C. V. Noble	1924	71	4.3
Urban Virginia	6 [2]	Gee and Stauffer	1929	103	3.9
Laurel County, Kentucky	301	Merton Oyler	1930	16	3.8
Minnesota Villages and Towns	253	C. C. Zimmerman	1929	90	3.6
Eleven States	1466 [3]	E. L. Kirkpatrick	1926	62	3.5
Iowa Farms	237	G. H. VonTungeln, et al.	1928	85	3.5
Minnesota Cities	255	C. C. Zimmerman	1929	122	3.1
Rural Virginia	6 [2]	Gee and Stauffer	1929	53	3.1
Vermont (Survey)	294	Muse and Brooks	1929	54	1.8
Vermont (Record)	294	Muse and Brooks	1929	36	1.7

[1] Unpublished Study, Oklahoma Agricultural and Mechanical College
[2] Institute Monograph, University of Virginia
[3] United States Department of Agriculture, Department Bulletin

SOCIAL PROBLEMS INVOLVED

The social aspects of health are reflected in the biological side of population growth. The development of the resources of the state requires an active, vigorous population. In the assurance of such a population vital processes play a most important part. Of primary significance in this respect are the maternal and infant mortality rates. It is a generally known fact that the number of mothers dying each year from causes incident to child birth is not decreasing as rapidly as the advance of medical skill makes possible. It would seem that deaths from these causes should have been reduced to the minimum long before this time. It is also true that the number of children dying under one year of age is great.

A large number of the deaths of both mothers and infants could be prevented. In fact, child-bearing is a normal function of the human organism and the conditions which cause death to either the mother or the child are for the greater part abnormal, and could be corrected, by diet, rest, exercise, fresh air, correct clothing for the expectant mother, and medical and nursing care, if reached in time. In spite of what the medical profession has learned concerning such matters, the habits, tastes, whims, fancies, and ignorance and indifference of expectant mothers, and sometimes of their husbands, almost defy any marked improvement in the control of maternal and infantile deaths.

TABLE V

Maternal And Infant Mortality Rates For Oklahoma [1]

YEAR	INFANT MORTALITY RATE [2]	MATERNAL MORTALITY [3]
1929	62.1	6.0
1928	77.2	5.8
1927	72.6	5.2
1926	70.5	6.2
1925	72.4	
1924	72.4	
1923	74.5	
1922	70.3	4.5
1921	72.4	5.9
1920	71.9	7.7

[1] Report, State Department of Health, 1928-1931 for years indicated.
[2] Ratio of deaths under one year of age to 1000 living births for same period.
[3] Number of deaths of mothers from causes incident to child birth to 1000 live births.

In Table V the figures are given, where available, for the maternal and infant mortality rates for Oklahoma for the ten year period of 1920 to 1929. These data are certainly not encouraging.[1] They do not show any definite trend toward improvement It is true that the infant mortality rate for 1929 is the lowest in the whole decade, but that of 1928 is the highest in the period. Although the maternal mortality rate for 1920 is higher than in any other year shown the rate has been constantly rising since 1927. This can mean but one thing: the people of Oklahoma are not making the use that could be made of the great body of medical knowledge and unsurpassed skill that is now at their disposal.

The Metropolitan Life Insurance Company has data at its disposal from the many million industrial policy holders of the company. In describing

[1] It must be admitted, however, that at least a part of this fluctuation and apparent stubbornness in the maternal and infant mortality rates is possibly due to variations in the enforcement of the registration law. It is certain that rigid enforcement of this law in more recent years would cause the rates to seem higher than in previous years.

health conditions in the United States during 1930 the company makes the following statements concerning the situation regarding diseases of pregnancy and childbirth:

> "For the third successive year, a new minimum has been established for puerperal diseases. The rate for 1930 was 12.3 per 100,000. This means a reduction of 10.9 per cent, since the year before and 37.9 per cent since 1911. Had the death rate of 1911 prevailed in 1930, there would have resulted 1,371 more deaths from these diseases than actually occurred.
>
> "Despite this improvement among insured mothers, their mortality from puerperal conditions is needlessly high, as it is for women generally throughout the country. The maternal deathrate for American women is running at 7.0 deaths per 1,000 live births, a figure which may be compared with 4.4 in England and 3.1 in Denmark. There is really no good reason why other countries should have lower rates than prevail here. We have estimated that 10,000 of the 16,500 deaths which occur each year, could be prevented if expectant mothers received the same type of care that is made available by the Maternity Center Association of New York City and by other agencies which have concentrated on the care of pregnant women. It is a very significant achievement that poor women under the care of the Maternity Center Association should show a maternal mortality rate of only 2.4 per 1,000 live births and that stillbirths and the deaths of infants in the first month of life should show corresponding declines as compared with the rest of the community." [1]

Everywhere, writers on this subject point out that at least half of the maternal and infantile deaths that occur each year are preventable. There is no good reason why the people of Oklahoma should suffer every year maternal and infant death losses needlessly. There are very few states in the Union that can show a record for progress in the building up of a systematic organization comparable to that which Oklahoma has made during the first quarter-century of its existence as a state. Yet, because of financial, educational, and other conditions, many of which are removable, the state has not been in a position to take full advantage of the organization and advancement it has made.

Urbanization is an influence which has been rather closely associated with a high infant mortality rate in Oklahoma. While figures showing the maternal and infant mortality rates separately for the smaller cities of Oklahoma are not available for all the years covered by this study, it is definitely known that the rates for the cities are higher on an average than for the open country.

In 1928, the maternal death rate per 1,000 live births for the Birth Registration area of the United States was 6.2 for the rural and 7.8 for the urban communities. In Oklahoma the corresponding figures for the sane year were 6.0 for the rural and 12.8 for the urban communities. [2]

The data given in Table VI and Figure 1 show comparatively the infant mortality rates per 1,000 live births for the rural and urban populations of Oklahoma and Tulsa Counties. It will be noted that the rates for Tulsa and Oklahoma City are much higher than those of the rural

[1] Metropolitan Life Insurance Company, Statistical Bulletin, Vol. XII, No. 1, Jan. 1931, p.6-7.

[2] Tenth Annual Report, Oklahoma State Department of Health, Page 43.

portions of the counties in which these two large cities are located. Also, while both the urban and the rural infant mortality rates have declined materially in these counties between 1920 and 1929, the rate for the rural populations in both cases has declined much more uniformly and rapidly during the latter half of this period than that of the city populations.

From 1920 to 1930 the number of Oklahoma people living in the open country, that is outside of any incorporated town regardless of size, has declined by approximately 5.3 per cent. No doubt the proportion living in cities of over 5,000 inhabitants has increased by a much larger percentage than that. The larger cities such as Oklahoma City, Tulsa, Muskogee, and Enid increased from 5.0 per cent for Muskogee to over 100.0 per cent for Oklahoma City. This slow decline of both the maternal and infant mortality rates that has characterized the trend in the state since 1920 has certainly been associated to a great extent with the rapid increase in urbanization.

TABLE VI

Comparative Rural-Urban Infant Mortality Rates Per 1,000 Living Births in Oklahoma and Tulsa Counties

SOURCE: Oklahoma State Department of Health, Report for 1929, Page 94.

YEAR OF REPORT	OKLAHOMA COUNTY (URBAN)	OKLAHOMA COUNTY (RURAL)	TULSA COUNTY (URBAN)	TULSA COUNTY (RURAL)
1920	99.3	81.8	90.8	120.0
1921	77.5	78.3	134.2	136.5
1922	102.2	64.9	110.4	129.3
1923	113.5	55.2	136.3	78.3
1924	86.3	72.6	71.2	75.2
1925	78.7	64.1	106.2	54.6
1926	83.7	50.2	110.5	57.6
1927	101.1	91.1	93.0	68.8
1928	85.5	68.5	63.2	51.9
1929	101.6	51.6	89.6	61.4

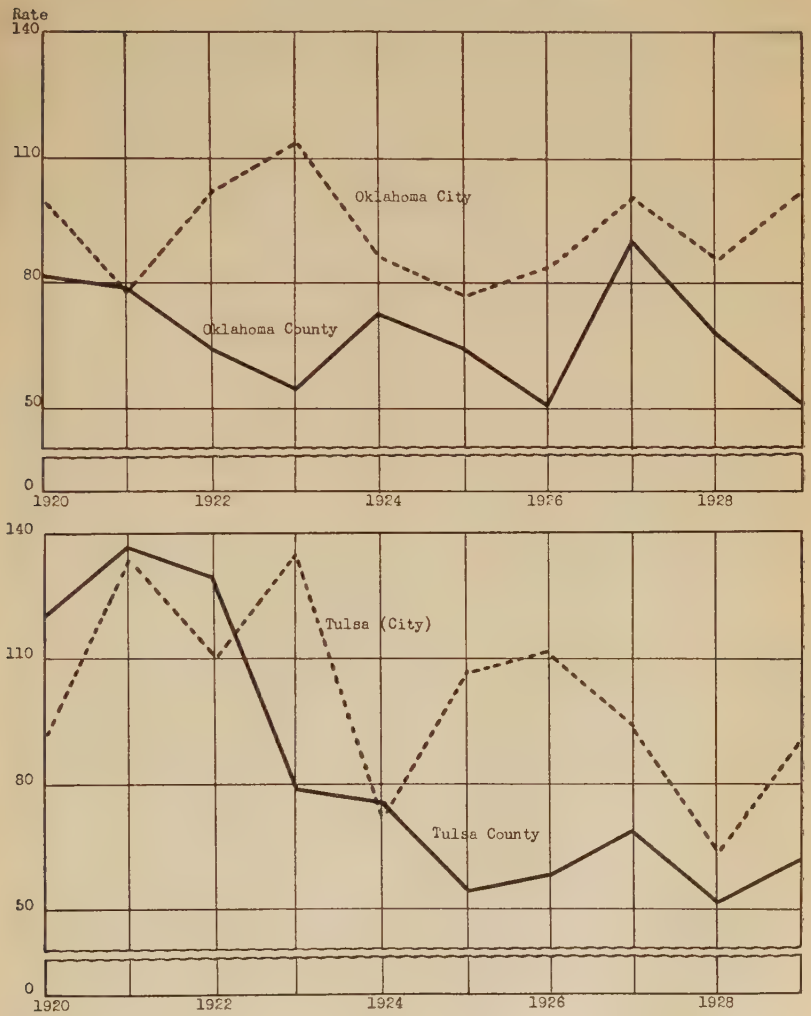
Although race is a biological factor within itself, it is so closely associated with such social influences as education, economic status, and occupational status, not to mention many other discriminations, that the term has become practically synonymous with social designation. The color of the skin has vital consequences upon the economic and social life of any individual and it operates unfavorably toward minority color groups in a mixed population.

Living conditions are such among the colored races residing in Oklahoma that maternal death rates among them are especially high. In 1928 the maternal death rate in the Birth Registration area of the United States was 12.1 per 1,000 live births for the colored races and 6.3 for the whites. The corresponding figures for the Oklahoma population during the same year were 19.4 per 1,000 live births among the colored races against 6.4 for the whites.[1] Thus, it can be seen that a very material factor in lowering the maternal death losses in Oklahoma is the colored portion of the state's population.

[1]Tenth Annual Report, Oklahoma State Department of Health, Page 43.

FIGURE 1

Comparative Rural-Urban Infant Mortality Rates Per 1,000 Living Births In Oklahoma And Tulsa Counties



Source: Oklahoma State Department of Health, Report for 1929, Page 94.

Detailed figures for infant mortality have not been compiled by the State Health Department, so that it is impossible to state exactly just what the conditions are relative to this point. However, there is almost an invariably high correlation between the maternal and infant mortality rates for different groups within the whole population. It is to be expected, therefore, that the colored populations have infant mortality rates which are disproportionately high in comparison with the white population.

There are several corollary problems concerning the trends toward urbanization which affect maternity and infancy. The employment of women in industry, especially wives and expectant mothers, unemployment, low wages, apartment house living, changing food habits in consequence of changing from outdoor to sedentary modes of living, and many others are associated with this problem. But it will have to be said in passing that these are all involved in the general topic of urbanization, and constitute some of the main reasons why the growth of cities has been unfavorable to the reduction of infant and maternal mortality.

There are few phases of the health situation which may be thought of as being more important to the human race than this which has just been briefly discussed. The propagation of the race depends upon conditions favorable to healthy and happy motherhood and childhood.

According to the State Health Department's Report for 1928-1930, practically all of the major communicable diseases show encouraging decreases between 1928 and 1929. The number of cases of typhoid fever reported declined by 31.3 per cent, diphtheria decreased by 16.8 per cent, small pox by 40.9 per cent, measles by 81.1 per cent, pneumonia by 26.6 per cent, malaria by 33.0 per cent, scarlet fever by 11.3 per cent, and tuberculosis by 5.0 per cent. Although these are variations of only one year's duration, they indicate a possibility of stamping out almost entirely certain diseases of this class. All of these reductions are attributable to cooperation of the health forces of the state, the municipalities, food packers, educational programs, and to improved economic conditions. Between July 1, 1928 and June 30, 1929 the State Bureau of Sanitary Engineering approved plans for water works projects in 49 towns and cities representing an expenditure of $2,381,923, and sewer projects in 76 towns and cities costing $2,438,150. This division also provided malaria tests for 13,755 persons residing in seven counties, actually giving treatment to 6,038 school children. As a part of the malaria program, a total of 1,443,730 quinine capsules were distributed in the counties affected by this trouble.[1] These figures are quoted to give the reader an idea of the social and economic importance of just one or two efforts now being made to reduce communicable diseases in Oklahoma to the lowest possible figure.

Another indication of the social and economic aspects of the health problem may be seen from the figures given in Table VI. The causes of death given in this table belong primarily to that class of diseases known as degenerative diseases. Automobile accidents are an exception to this, but they are of such great importance, considering the number of automobiles now in use and the number of non-fatal as well as fatal injuries resulting from them, that they have been included in this class of causes of death.

The application of scientific knowledge to individual habits of life has materially reduced the prevalence of communicable diseases. But this is not true of degenerative diseases. Since about 1880, possibly earlier, the number of deaths from these causes has been increasing both steadily and rapidly in the United States. The increase in both the absolute number of deaths and the rates per 100,000 of the population of Oklahoma from

[1] Tenth Annual Report, State Health Department, pp. 65-66.

such causes as heart diseases, chronic nephritis or Bright's disease, and cancer between 1920 and 1929 is alarming to one who has not taken previous notice of it. The same may be said for senility, although one seldom expects to live long enough to die of old age. Diabetes and paralysis have shown only very slight increases in rates during the ten year period of 1920 to 1929. The enormity of the absolute increase of most of these causes of death may be readily seen by comparing the percentage increase, 18.1 per cent, in the population of Oklahoma between 1920 and 1930 with the increase in the number of deaths resulting during the same time from the causes mentioned.

TABLE VII

Comparative Number of Deaths from Specific Causes (Non Communicable) and Rates for Each in Oklahoma, 1920 and 1929 [1]

CAUSE OF DEATH	NUMBER	NUMBER	RATE PER 100,000 POPULATION		PER CENT ABSOLUTE INCREASE
	1920	1929	1920	1929	1920 to 1929 [2]
Apoplexy	599	1346	29.5	56.1	124.7
Bright's (Chronic Nephritis)	682	1067	33.6	44.5	56.5
Cancer (all forms)	617	1148	30.4	47.8	86.1
Diabetes	152	195	7.5	8.1	28.3
Diseases of Heart and Arteries	817	3476	40.2	144.8	325.5
Paralysis	330	393	16.2	16.4	19.9
Senility	643	1058	31.7	44.1	64.5
Automobile Accidents	86	474	4.2	19.7	451.2

[1] Source: Reports of Oklahoma State Health Department for years indicated.

[2] Again the reader is reminded that part of this increase may be due to a more careful reporting and checking of death rates in 1929 than in 1920 on the part of both the state and county health authorities. Nevertheless, these figures are somewhat typical of what has been happening in the original Federal Registration area of the United States.

There is considerable difficulty in explaining why degenerative diseases are now taking several times more lives than formerly. A common belief among students of the problem, however, is that the rapid changes in the mode of life among the American people is largely responsible for this condition. There are now large numbers of city dwellers, newly rich people, and retired people who have during the earlier portions of their lives been active on farms, in the forests, on the ranges, and in other forms of outdoor physical labor. They have built up vigorous bodies, strong muscles, and appetites for foods heavy in protein content. Now that they have settled down to a sedentary indoor life, many into inactivity, ride to and from their places of business, spend little time in the outdoor air, get little sunshine, but continue their old habits of eating and often eat highly concentrated foods, there is a surplus of both energy and tissue in their bodies. The unused energy and tissue must be disposed of as waste since it cannot be utilized to advantage. This overtaxes the organs of excretion, the circulatory and nervous systems. Poisons are generated in the body, and gradually break down the vital organs. Degenerative diseases, contrary to the popular belief, do not produce death instantaneously. The causes of these types of diseases run on over long periods of time, and when they have "run their course" the organs of the body cease their work abruptly. Heart troubles of various sorts have been known to bother patients for from ten to thirty years before death actually came.

Labor saving devices, improved means of travel, small apartment houses, dissipating social gayeties and short hours of work, all have their attractions, but the present era is one of transition and those who are being transplanted from a form of existence that required sweat and muscle to one of ease and comforts may expect to pay dearly for it, unless the changes are made sanely and in keeping with common sense laws of health. The artificial culture that now characterizes American civilization has doubtless been bought at the price of human life. It is in this connection that the health problem has its most direct claim upon the time and interest of the sociologist.

The automobile is a source of human suffering that is becoming increasingly dangerous. In 1920, there were 86 deaths in Oklahoma from automobile accidents. This gave a rate of 4.2 deaths per 100,000 of the population. In 1929, there were 474 deaths reported from the same cause, not to mention serious permanent injuries and minor casualties. Therefore, the death rate from automobile accidents had risen from 4.2 in 1920 to 19.7 per 100,000 of the population in 1929, an increase of almost five times the 1920 rate. By turning the figures around it is easy to see that in 1920 there were 43.0 deaths per 100,000 automobiles against 83.1 deaths per 100,000 automobiles in 1929. In other words the likelihood that a given automobile would kill at least one person was almost twice as great in 1929 as in 1920; and actually, five times as many people were killed by automobiles in 1929 as in 1920. During this same time the automobile death rate per 100,000 population increased almost five times; but the number of automobiles increased only one and two-thirds times, 168.0 per cent to be exact, and the population of Oklahoma increased only 18.1 per cent, or less than one-fifth of its 1920 figure.[1] From these facts, it is easy to see that the danger of the automobile to human life in Oklahoma is increasing so rapidly that, in the future, more and more emphasis will need to be placed upon safety education. It will become necessary to limit the operation of automobiles to persons who are legally responsible for their own conduct. Also, auto drivers should either be compelled to carry liability insurance for the protection of the public or required to produce evidence that they are financially able to pay for such damages to others as their machines may cause.

CONCLUSION

These are only a few of the ways in which social and economic conditions are known to operate in determining the trend of public health and safety. However, it has been shown that in preservation of that part of happiness which belongs to health, man must have a knowledge of the means and laws that provide and conserve his health. This is gained through education, not merely in books and in schools, but in and by his experience and the experience of others. In order to provide these means and to acquire this knowledge he must have the puchasing power, money, credit, or a commodity to offer in exchange, with which he can procure them. He may know that his roof leaks, that his doors and porches need screens, that his children should be vaccinated but if he lacks the money with which to pay for these beneficial things, he can not enjoy them. He may know that poverty and ill health travel like a cyclonic storm in a vicious circle, but he must have some means by which he can break up that circle. There is the economic problem of health. Man must adapt his

[1] These calculations are made on the basis of data furnished by the bureau of vital statistics, Tenth Annual Report, Oklahoma Department of Health and from the registration of automobiles as reported by the United States Statistical Abstract, 1930, Table 418, p. 387. The figure for the percentage increase in the population is taken from The Daily Oklahoman, Nov. 22, 1930, page 3.

material improvements, which were created in order to increase his happiness, to not merely his wish and fancy, but to the needs and nature of his mind and body. He may build machines for increasing his rate of travel; he may build skyscrapers in order to economize on land, he may invent machinery to save labor, he may seek his own pleasures at the expense of his neighbors and frequently his own comforts later on. But all these advancements involve the safety and wellbeing of not only himself, but also of the race. That is the social problem in health.